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TECHNICAL INNOVATIONS
SPEED CUTTING-TOOL, TAP PRODUCTION

The 1948 production of standard cutting tools having wide application, such as taps, threading dies, cutters and broaches, was 140 to 170 percent of 1947. The output of hard-alloy tools was more than tripled.

The Frezer Plant in Moscow started production of adjustable hand reamers for reaming holes, which are suitable for small-series and repair work because of their wide range of adjustment (1 to 2 millimeters). The designs for these reamers were worked out and perfected at the Frezer Plant. They can ream holes having diameters from 10 to 38 millimeters. Machine shell reamers, adjustable up to 100 millimeters, have also been added to the categories of machine tools being manufactured at this plant.

For purposes of drilling and counterboring, the Frezer Plant started producing two types of high-duty combination two-tooth counterbores: (a) with an adjustable shaft, and (b) with a drill. Counterbores with adjustable shafts are manufactured to work holes from 28 to 100 millimeters. For purposes of working deep holes with larger diameters, the plant manufactured a two-tooth counterbore with drill.

The Sestroretsk Tool Plant started series production of disc side and face cutters with inserted blades. The blade is a smooth, thin plate, 1.7 to 3 millimeters thick, with up to one-degree taper, which is positive-locked in the housing. Consequently, cutters can be made with a large number of teeth (from 14 to 24). This design permits considerable saving of steel, even in comparison with the sectional cutters having wedge-shaped blades.

For further savings of high-speed steel, the Frezer Plant started to work out new designs for sectional cylindrical cutters, having 20- and 45-degree angles, which have a number of technological and practical advantages in comparison with the GOST 2569-44 and GOST 1979-43 cutters. A saving of up to 39 percent in high-speed steel is effected.

In 1948, the Frezer MZS (Moscow Tool Plant) and other tool plants developed the production of sectional large-module hobs. The Frezer Plant started to produce two types of sectional hobs with ground profiles. The first type was intended for large-module gears (18-30 millimeters). It has separate high speed steel blades on each tooth, joined to the steel body by screws. The cutside diameter of the hobs for gears of 18- to 30-millimeter module was changed from 245 to 330 millimeters. This design saves up to 50 percent in high speed steel in comparison with the one-piece design. The second type of hob with ground profiles is manufactured for gear wheels of 6- to 16-millimeter module. The cutting part of the hob is made up of high-speed steel inserts which are inserted into the steel housing. The saving of high-speed steel in comparison with the one-piece cutter amounts to 30 percent.

In the field of cutting tools for gears of small-module meshing, the Moscow Tool Plant started series production of disc and shank-type gear cutters, and Class A shavers for gears of 0.4 - 1.0 millimeter module. They were manufactured on the machine tool designed by Engineer Vasil'chuk, which also manufactures shavers and cutters for gears of small module and a greater number of teeth. One of the plants organized the production of Class A small module hobs (0.2 - 1.0 millimeter module) and small-module involute broaches (0.3 - 1.0 millimeter module) for broaching internal gears.

Universal and special purpose die heads were developed in 1948. In addition to the 1K and 2K die heads with round threading dies produced earlier, the Frezer Plant began manufacture of 2K die heads with round threading dies for external threading, having diameters from 9 to 24 millimeters, and by special order, type 4K for external threading with diameters of 12 to 42 millimeters. The Sestroretsk Tool Plant started to produce RNGF No 1 universal die heads with tangential threading dies for external threading of 1/4- to 3/4 inch diameters, which are very suitable for use on automatic lathes.

During 1948, tool plants perfected new types of special threading and boring chucks for pipes and sleeves. The Moscow Tool Plant organized series production of original high-duty threading chucks with round dies for threading external conical threads of pipes of 2-1/2 to 13-3/4 inch diameters (Types TN4K, TN6K, TN8K and TN13K) as well as for internal conical threading of sleeves (Types MN4K, MN8K, MN13K). Corresponding to these chucks, the Frezer Plant produced high-duty sleeve-boring chucks for boring sleeves to be threaded.

The production of measuring tools, and of universal measuring tools in particular, was considerably increased in 1948. For example, the production of micrometers, in comparison with 1947, was about 170 percent, slide gauges, up to 150 percent, minimeters, more than 300 percent. Tool plants increased the output of large-dimension measuring tools for large-scale machine building; for example, slide gauges from 500 to 3,000 millimeters and indicating checking devices up to 1,000 millimeters.

The Frezer Plant, with the technical help of Stankinprom, organized conveyer-belt production of taps from 2 to 16 millimeters, as well as round threading dies. The Kalibr Plant began conveyer-belt production of micrometers and slide gauges.

Conveyer methods in the production of taps involves six conveyer-belt lines. Each line is equipped with two belt conveyors operating intermittently. One of the belt conveyers runs from the machine shop to the heat-treatment shop, the other, [from the heat shop ?] to the grinding shop. The conveyer line is equipped with measuring hoppers (mernoy tarcy) in which the taps are grouped in 20 to 50 pieces, depending on their size. They are automatically conveyed in set rhythm from one operation to the next. As a result of mass conveyer production, the output of taps has increased more than three times, the labor

productivity 170 percent, the cost of production reduced 25 - 50 percent, depending on the size of taps, and the speed of the production cycle stepped up ten times. The expense incurred in setting up the conveyors paid for itself in 4 months.

Conveyor-belt production of round threading dies will be begun on seven conveyer lines equipped for conveying semifinished parts in measuring hoppers. Three of these are already in use.

Intermittent conveyer-belt production of micrometers permitted a five-fold production increase, doubled labor productivity, cut cost of production 45 percent, and made the production cycle six times as fast.

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